SERIE RESEARCH MEMORANDA

THE PRUDENTIAL REGULATION OF FINANCIAL INTERMEDIARIES

UNDER CONDITIONS OF INFORMATION ASYMMETRY:

SOME MICRO- AND MACRO-ECONOMIC ASPECTS.

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1. Introduction

In paragraph six of the paper by professor Visser (Visser, 1989) some remarks are made on the micro-economic foundations of financial intermediation. In recent literature one can find a substantial number of studies explaining the existence of financial intermediation as a result of the lender-borrower information asymmetry. Before I pay attention to these studies, we first have a look at some less recent literature. Next, I discuss the question whether a fractional banking system is stable or not and needs to be regulated.

Basically one can distinguish two opposing views on this matter. The first school argues that there is no need to regulate either individual banks or a banking system as a whole. Market discipline will prevent banks from taking excessive risks by imposing adequate risk-premiums on bank liabilities. Economic agents collect all relevant information and make unbiased estimates of the risk they are exposed to. As a matter of fact the capital market is considered to be information efficient (cf. Fama, 1970) The macro problems (the so called systematic risk) arising from a fractional banking system can easily be removed by separating the functions performed by banks. This view is advocated by e.g. Fama (1980, 1985), Wessels (1987)[1] and Kareken (1985) The second view argues that the existence of banks, even when they give signals of their integrity trough their capital structure or by their good reputation, cannot solve either the moral-hazard problem or the instability problem resulting from the term intermediation performed by commercial banks. Banks should be regulated on behalf of the depositors to prevent welfare losses resulting from bank failures.[2] In this view banks perform several, collective welfare increasing, functions and these functions cannot be separated without a loss to society (Guttentag and Herring (1986, 1987)).

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[1] The view of Wessels (1986, page 101) on prudential supervision reflects the "rational expectations" school. He expresses his view as follows:

"If the evidence supports the notion that prices in financial markets in general reflect informed and unbiased forecasts of future market values what rationale is there then for subjecting part of the financial market to regulatory constraints? As even a superficial examination of the current vogue of deregulation shows, barriers between different segments of the financial market are very much the product of regulation aimed at restricting entry and preventing competition rather than a lack of efficiency and competition per se. The evidence from unregulated financial markets clearly documents that competition ensures that current prices consistently reflect current expectations, implying that all information available to market participants is embodied in market prices. Regulation in financial markets seems only to create barriers to efficiency rather than surmounting them."

[2] Also bank borrowers would have to make costs when their bank fails. Guttentag and Herring (1987) argue that they have invested in a long term relationship with their bank. If a bank happens to fail they have to carry the costs of a reinvestigation to their creditworthiness by a new bank. This view is in line with the suggestions of, for example Campbell and Kracaw (1980), that borrowers have to pay for the information production necessary to confirm the true value of their projects.

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From a purely theoretical point of view market discipline by itself cannot - in my opinion - completely solve the moral hazard problems associated with banking in a world where bankers have more information than their creditors. But it can be argued that other forces ensure the stability of banks. The most important problem is how macro-economic problems resulting from shock-induced bank failures should be dealt with.

2. The problems arising of the borrower/lender information asymmetry.

2.1 Adverse selection as a result from informational asymmetries.

Before I pay attention to the literature on financial intermediation, a few words about the effects of information asymmetry are in order. In the traditional neo-classical theory one of the most important assumptions concerning the functioning of the intertemporal capital market is that all relevant information on investment projects is costlessly available to all participants (Stigler, 1961, 1967, Hirshleifer, 1958). All new information is also instantaneously available to all parties involved. A few remarks on the relevance of this assumption must be made.

In this perfect neo-classical world an entrepreneur (or a deficit household) issues IOU's to finance his (or hers) investment projects. This IOU is - under conditions of uncertainty - a conditional promise to pay an amount of money to a deficit household in a well-specified future state of the world. Because the deficit households have access to all the relevant information it is possible to create perfect risk sharing (in an Arrow/Debreu sense) contracts because:

- The surplus units (or consumers) can observe the true (expected) value of the projects to be financed. The producers cannot make a profit by presenting "lemon" projects to the market as good - i.e. profitable-ones.
- No potential agent-principal conflict arises. The agents cannot shift any agency-costs to the external investors. As a result the initial (expected) value of the project is not lowered because of the agency costs caused by a non-optimal performance of the agents.

In this frictionless/complete information capital market, the creation of Pareto-optimal contingent-state contracts is possible. Al agents are able to perfectly diversify their portfolios and there is no need for the deficit-units to compensate the surplus units for project-specific risks. In this "Nirvana" world there is no spread between lending and borrowing rates and a Pareto-optimal equilibrium is achieved (cf. Hirshleifer, 1958).

Unfortunately the real world far from perfect at all. Apart from transaction costs, from which I will abstract in this context, there is also a substantial cost resulting from borrower/lender information asymmetries.[3] When information is only obtainable at a substantial cost, market

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[3] It could be argued that information costs are a special kind of transaction costs. Leland and Pyle (1977, footnote 16 on page 383) make a clear cut distinction between these two types of costs. They explain why they make a distinction:

"We do not consider information of this type to be a normal "transac-

failures resulting of an adverse selection process and agency costs, may occur (Akerlof, 1970). The information asymmetry between potential borrowers and lenders opens up the possibility for producers to present bad projects (lemons) to the market as good ones. They can simply collect the revenues of the IOU's issued and run. In a one-period setting this dishonest strategy will result in high, but obviously not sustainable, profits. The honest entrepreneurs are the losers in this market. They have to dedicate the funds obtained to the risky projects, whose results are uncertain. Compared to the dishonest strategy the earnings of the honest actors are lower.

This dishonest strategy cannot be aussumed to be accepted by the investors. In the next period they raise their requested expected return rate and because they cannot distinguish, due to the information asymmetry, ex-ante the quality of the project to be financed, this rate is charged to _all_ projects. The high requested rate reduces the net present value of the projects to be financed. The good projects are crowded out of the market-they have a negative net present value - and only the bad ones remain. The result of this process is a lowering of the average quality of projects presented to the market. At the end of the day the result of the producers' moral hazard is a complete breakdown of the market. No good quality project can get external finance at a reasonable cost.

2.2 Capital structure as a signalling device.

Obviously this theoretical result is not in line with what one observes in the real world. Several authors developed models to explain how in a world with costly information a finance equilibrium can be achieved. A major step to solve the problems of asymmetrical information was made by Leland and Pyle (1977)[4] They suggest that a producer can _signal_ the quality of his projects to the market by retaining a personal equity in the project.[5] His personal stake in a project should be just as high as the _specific_ risk of the project to be financed. This shift of specific risk from the external lenders to the entrepreneur means that the lenders do not have to take any specific risk; in fact they lend (as suggested by Leland and Pyle) against the riskfree rate.

On first sight this solution seems to be a good one. It does not pay for the entrepreneurs to "cheat" the market. But, unfortunately, this signalling solution is not a costless one. In this imperfect market entrepreneurs cannot diversify away the project specific risk. Although, trough signalling, more projects can be financed, there is still a welfare loss due to the entrepreneurs' personal stakes being exposed to uncompensated specific risk.

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tions cost." Securities can be exchanged in many cases independently of how much the buyer knows about the precise nature of that security. Costs of exchange are considered transactions costs. We do not consider better information or "sorting costs" to be a cost _necessary_ for exchange. Our approach can be contrasted with that of Benston [1976]. By emphasizing informational asymmetries, we can show not only why financial intermediaries exist, but also why they tend to be characterized by high leverage."

[4] No attention will be paid to the solution suggested by Ross (1977). In Ross model the firm's management is held personally responsible for the costs associated with the failure of the firm.

[5] This personal stake is of course disclosed to the market.

This signalling model can be used to explain the existence of financial intermediaries in a world with asymmetric information. Leland and Pyle argue that firms can exist, which gather and sell information about particular classes of assets, because there are economies of scale. But two problems concerning selling information have to be solved. First, firms selling information cannot appropriate all the returns from the information they have generated. Due to so called public good character of information it can be resold without losing its value to the original buyers. Second, there should be an _explicit_ guarantee of credibility of information sold to the market by the information producer.

Leland and Pyle suggest ways to overcome these problems. The information generated can be captured in the information producer's assets. These assets can be traded, but the information contained in it cannot. The credibility problem can be solved trough a capital structure signal. The information producer proves his integrity by having a stake in his own firm's equity. If the firm fails, and such will happen when the firm selects lemon projects, the firm's organizer must take a substantial (personal) loss.

This approach sheds new light on the financial intermediary's capital structure. Equity is not considered to be a financing device for the funding of assets, but serves as a credibility signal. A change in the capital structure, increasing equity relative to other liabilities, increases the market value of the firm. This conclusion is at odds with those of the standard Modigliani/Miller theory. Another interesting conclusion is that financial intermediaries can increase social welfare. They hold large, well diversified, portfolios and therefore the equity stake needed to confirm credibility can be relatively low. So less equity is exposed to project-specific risk and as a result social welfare is increased.

The suggestions done by Leland an Pyle have received much attention in recent literature on information economics. Some other models - based upon the assumption of imperfect information - were presented by Diamond (1984) en Draper and Hoag (1978).[6] These authors modelled, although in a fundamentally different way, the aspect of the intermediary's capability to reduce agency-costs. Also an important contribution of Campbell and Kracaw (1980) must not be overlooked. They quantify the amount of equity (or wealth) to be invested on behalf of the intermediary. They end their analysis with this, rather simple, equation:

$$W_i \left[\frac{V_A - \bar{V}}{V_A} \right] > S_A \frac{\bar{V}}{V_A}$$

Where

W_i : Is the wealth commitment of intermediary i,
V_A : Value of the good quality projects to be financed,[7]
$\bar{V}$: The average project quality,

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[6] For an interesting discussion of the Leland and Pyle approach, see Diamond (1989).

[7] Only two types of projects exist in this stylized model: V_A-projects are the good ones and V_B-projects the bad ones.

S_A: The entrepreneurs side-payment to the information producer.

The wealth commitment should be higher than the side payments by the producers offering projects to be financed. In this case there is, even for notoriously dishonest information producers, no rationale for presenting lemons to the market.

2.3 Is signalling an effective solution?

Although the extension of the Leland en Pyle model by Campbell and Kracaw can be considered a major improvement, these authors are not able to prove that the integrity problem is completely solved. They assume that the market, or, to be more specific: the investors, know the exact value of the underlying projects to be financed. If this is the case, it is true that it does not pay for the intermediary to cheat the market. But, if the market cannot estimate the exact value of the underlying projects to be financed, the possibility of a dishonest information producer still exists. Adherents of the efficient-market hypothesis will, of course, reject this line of thoughts. They argue that the financial markets are able to make correct- unbiased - estimates of the risk exposure of financial intermediaries. But, in our opinion, this hypothesis cannot hold true when information is costly. Grossman and Stiglitz (1989, page 134) emphasize that costless information is not only a sufficient but a necessary condition for markets to be efficient. If this condition is not fulfilled individual investors (depositors) must incur costs for estimating the risks of intermediaries' portfolios. This solution is very inefficient. The costs of the reproduction of the information, already produced by an specialized -and therefore efficient- information producer, are without any doubt higher than the cost reduction achieved by the centralization of information production.

It should also be mentioned that these models apply to investment bankers (in an American sense) only. But most intermediaries perform other, balance sheet related, services as well. They provide liquidity to risk adverse consumers and deposit-related transaction and checking services. They also engage in term intermediation and are, as a consequence, exposed to an interest rate and a liquidity risk. So, depositors should also determine and quantify other risks they are exposed to.

The end of the story is that the principal-agent conflict is not really solved, but only transformed into an intermediary/depositor conflict.

2.4 Some other solutions

One could suppose that, if this line of reasoning was indeed correct, there would not exist a stable banking system at all. As a result of moral hazard "wild catting" banks would fail and in the long run there would be no market for intermediaries. Looking at the real world, however, one can conclude that this supposition is not quite true. In a multi-period setting other forces are fostering the soundness of banks. Managers of failed banks lose their jobs and have difficulties in finding new employment. New issues of shares and subordinated debt will be impossible and depositors will withdraw their funds when the safety of a bank is questioned.
One could also observe some kinds of self regulation imposed by bankers.[8]

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[8] Self regulation is only possible in a financial system with a limited number of participants. The communication and enforcement cost to achieve a system of self regulation are offset by the advantages of risk limitation. In a financial system with many institutions informal regulation is not

The aim of self regulation is usually limiting risk taking behaviour by some institutions that could be a threat for the more conservative institutions. Sometimes the government even authorizes self regulation and supports it by entry limiting regulations (Marquardt, 1987)

Of course banks do fail, but only failures of small, mostly unit branch banks, are caused by fraud, embezzlement, insider loans and malfeasance (FDIC, 1983). The failure of a major bank is quite a rare event and not always caused by excessive risk taking only but also by bad, incompetent, management. Even recent problems, for example the third world debt crisis (Saunders, 1986, page 52 -54) and the 1987 stock exchange crash, did not fundamentally disturb the normal functioning of the financial system. Saunders (1986) argues that the regulators do not allow large banks to fail and if a large bank failure is about to happen support will be given by the responsible authorities.

2.5 Are financial crises still possible?

These observations raise the question whether there is a reason to believe that major financial crises, causing macro-economic disturbances, can occur again or not. Before I embark on discussing this question a remark on the definition of a financial crisis is in order. Portes en Eichengreen (1987, page 10) define a financial crisis in the following manner:

> "A financial crisis is a disturbance to financial markets, associated typically with falling asset prices and insolvency among debtors and intermediaries, which ramifies trough the financial system, disrupting the markets capacity to allocate capital within the economy."

Schwartz (1982, page 11) rejects this definition, she calls such a crisis a pseudo-crisis, and goes one step beyond. She adheres to this definition:

> "A financial crisis is fuelled by fears that means of payment will not be obtainable at any price and, in a fractional banking system, lead to a scramble for high powered money. It is precipitated by actions of the public that suddenly squeeze the reserves of the banking system. In a futile attempt to restore reserves, the banks may call loans, refuse to roll over existing loans, or resort to selling assets. Such a sequence of events is to be distinguished from what happens during a disinflation of a deflation."

These definitions do not mutually exclude each other, on the contrary, they both represent a different explanation of a crisis. Kindleberger (1985, 4) stresses the point that bankfailures can originate both on the asset side and on the liability side of the balance sheet. Also major shocks can affect both sides at the same time or in a process of rapid interaction.

I my view either approach is consistent but do not in every occasion give a proper explanation. First I have a look at both views and after having done so I infer some preliminary conclusions.

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possible due to the high costs.

3. The explanations of (pseudo) financial crises.

3.1 The asset side approach

3.1.1 The business cycle explanation

In the 'sixties and 'seventies of this century several theories emerged trying to explain the instability (or the fragility) of a fractional reserve banking system as a result of the business cycle. With the benefit of hindsight one might say that this theory was very much a product of its time. In the decades after World War II the economies of the Western world grew at stable rates. This growth was hampered by some minor recessions, but these recessions did not cause traumatic financial crises such as occurred in the 'thirties.

In the United States a particular phenomenon occurred during these decades. The functioning of the financial system was halted by so called credit crunches. During these periods market interest rates rose above the official ceilings set by regulation Q. As a result commercial banks could not compete for funds by bidding higher rates. Depositors could obtain market rates by only channelling their funds directly to corporations. They did so by investing in commercial paper or buying the shares of money market mutual funds. The real victims of the credit crunches were the small enterprises and the personal savers. As a rule these credit crunches occurred at the peak of the business cycle.

The most important contributor to the business-cycle theory is without any doubt Hyman Minsky (1977).[9] In Minsky's view a pseudo financial crisis can be explained as a result of an endogenous process within the financial sector. His line of reasoning is as follows. During the expansionary period of the businesscycle, firms tend more and more to rely on debt financing. There a two reasons to resort to debt instead of equity. Because current retained earnings are not high enough to fund all the investments to be made, the deficit must be financed externally by issuing debt. Debt financing also boosts profits because of the tax-deductibility of interest payments. Banks' willingness to finance the debt issues is high of course. Profits are increasing and profit expectations are adjusted upwards. Minsky argues that during the upswing the reliance on debt financing increases. The attitude of banks and corporations shifts from what he calls hedge finance towards speculative finance. Firms are more and more relying on short term debt and use it for long term investments. The liquidity of both the financial and the business sector is deteriorating. Kindleberger (1978) adds another interesting argument to this line of reasoning. Economic growth is fuelled by a "cheap money" strategy of the monetary authorities that makes debt financing even more attractive. At the top of the cycle real output growth declines and inflationary pressures emerge.

As long as the upswing continues no major problems occur. But, at the first signs of a recession the fairy tale comes to a dramatic end. Companies' sales plummet and profits decline. The price of a permissive strategy

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[9] An extensive survey of relevant theories of financial crises is presented by Wolfson (1986, part I). Because some older theories are outdated ot integrated in the more recent theoretical frameworks, they are not discussed here.

by banks has the be paid. During the downturn of the business cycle the need for short-term financing increases. Firms have to finance increased inventories and to refinance the short term debt coming due. The demand for credit is therefore rather inelastic. But the attitude of banks to risk has changed not only because real risk increases but also because the banks become less willing to (re)finance the financial needs of firms. Sometimes banks also try to liquidate debt in order to reduce risk-exposure.

The result of the increase in inelastic debt demand is a rise in interest rates. Sometimes the problems even get worse, when the monetary authorities tighten their policies to prevent inflationary pressures to continue. This restrictive policy will push interest rates upwards. When market interest rates break trough their regulated ceilings a so-called credit crunch may occur. The normal intermediation process may break down and firms have to resort to direct external finance, thereby excluding the regular intermediaries.

Although banks and business firms might get in serious trouble, a credit crunch normally does not cause a real financial crisis. Bank failure rates do not rise substantially and runs on banks do not occur. A relaxation of monetary policy will result in lower interest rates and in an end of the crunch.

The conclusion may be that the theories of Minsky and Kindleberger can explain short periods of disinflation. Although (small) - insufficiently diversified - individual banks or corporations may fail, no waive of failures spreads out trough the financial system. The reaction of the authorities concerned is very important. A tight monetary policy may have the result of amplifying a wave of failures instead of effectively dampening the consequences of individual failures.

3.1.2 Excessive growth as an origin of problems

Another explanation of financial crises is given by authors who explain a crisis as a result from excessive growth of financial institutions. Post War history shows several examples of the risk associated with fast growth. The U.K. financial system was hit as a result of the secondary banking crisis. The aggressive growth of a group, consisting of large number of relative small institutions, resulted in a weakening of their financial circumstances. The first oil crisis necessitated a rescue action (called Lifeboat) by the authorities in order to prevent a collapse of the fringe banks. Revell (1975) pinpoints the bad diversification of the portfolios and the high direct investments of these bank as the most important causes of the troubles.

Dutch history shows an interesting example of the damaging results from excessive growth.[10] During the late 'seventies and the early 'eighties the "mortgage banks" grew at higer than average rates. The booming prices of real estate made mortgage financing seemingly attractive and riskless. The loans provided were partially used for current consumption and not for the purchase of properties. Their permissive lending policies attracted high risk borrowers refused by more conservative banks. The easy finance pushed up prices and fuelled inflationary expectations. Near the top of the boom the mortgage banks got involved in risky direct real estate investments, probably in a desperate attempt to make high profits.

The second oil crisis and a restrictive monetary policy put an end to

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[10] Koelewijn (1987) described this episode of the Dutch banking history. Unfortenately his article in only available in Dutch.

this period of growth. Real estate prices fell precipitously and interest rates rose to unprecedented high levels. The losses on real estate wiped out the equity of the mortgage banks and only mergers - arranged and supported by the Dutch central bank - could prevent actual failures.

A few remarkable aspects of regulation should be highlighted. The Dutch central bank lowered the equity ratios for mortgage lending in 1977 - just before the boom started - from 10% to 3,33%. This change in regulation made mortgage lending relatively attractive for the banks involved and as a result prices (or expectations concerning prices) were pushed up. Only a few years later monetary policy, as already noted, worsened the crisis.

3.1.3 Some conclusions

Recent history shows that unbalanced growth can make banks more sensitive to macro-economic distortions. In order to prevent excessive risk taking the authorities should limit the risks taken by banks. This could be done by imposing liquidity and capital ratios, but one should not overstate the importance of these ratios. Attention must also be paid to the risks of poor diversification. Empirical evidence makes clear the risk of badly diversified portfolios. Belongia and Gilbert (1987) point out that failed agricultural banks had no different profit rates or capital ratios compared to the surviving banks. The most important difference they found was in portfolio diversification. Pantalone and Platt (1987) draw rather similar conclusions. Santomero and Vinso (1977) emphasize the relation between the volatility of earnings and the possibility of failure. Therefore regulators must pay attention to the aggregate portfolio risks instead of the risks of separate assets.

3.2 The liability side approach

3.2.1 Some backgrounds of the systematic risk

Another possible reason for regulating the financial system is the so called systematic risk (Friedman and Schwartz 1963/1971). Because bank usually lend long and borrow short they are exposed to a liquidity risk. Under normal conditions their "de jure" illiquidity causes no problems. On the contrary, their term intermediation services are a source of profits. Depositors pay for these services by accepting a (compared to the risk free rate) lower compensation. Given the informational asymmetry between the bank's management and its depositors their relation is based on confidence. Depositors believe that their deposits (or other bank liabilities) are in fact riskless assets. Several authors emphasize that the term intermediation by banks increases social welfare. Risk averse depositors prefer a flexible risk sharing contract with an intermediary instead of a long term, relatively risky, inflexible contract with a individual producer (Diamond and Dybvig, 1983, 1986).

Serious problems arise when depositors believe their assets are exposed to a non anticipated risk. Several signals can cause a change in a depositor's risk perception. Such a signal, e.g., can be a significant deterioration in the quality of a bank's assets. In this case depositors have a "real" cause for concern. However, it is also possible that depositors perceive other events as a signal, like a line of other depositor before the bank. In thid case there is no real but an "information" cause for concern.

A logic and rational response to the signals perceived is a flight in quality. Some depositors may simply transfer their deposits to a bank considered to be save. On a macro level nothing really changes, because the liabilities of banks are only reshuffled and total reserves are not squee-

zed. Some banks might get into liquidity problems but the banking system as a whole is not seriously hurt by a flight in quality. As long as banks are able to attract funds from the interbank market or the discount window the equilibrium will hold.

More serious problems arise when creditors lose confidence in all banks and decide to flee into currency. All banks have to deal with withdrawals so large that they have to sell off assets. In a financial market with asymmetric information the fire sale of illiquid assets is not possible without incurring losses. Potential buyers of assets cannot ex-ante distinguish the quality of assets to be sold off and consider these assets lemons. Therefore they are only willing to offer a average price for these assets. The low prices offered for the assets on the secondary market are an incentive for banks to keep on to their high quality assets and to dump the bad ones on the market thereby reinforcing the adverse selection process (Lucas and Macdonald, 1987).

Recent literature on bank runs discusses the question of the rationality of bank runs (Jacklin and Battacharya (1988), Postlewaite and Vives (1987)). In can be shown that a run may occur even when the soundness of a bank is not in doubt. A sudden event, like a failure of a large debtor, or an unanticipated large outflow of deposits, leading to a forced sale of assets below their "real" value, may induce a run. It may be rational for an individual depositor to run and thereby safeguard his wealth, but on an aggregate level running is irrational, because it triggers losses. The last depositors queuing up at the bank's premises have to carry the losses caused by the first. The best solution to solve this problem would be a collective decision by the depositors not to run, but the cost to reach an agreement would be too high. Moreover, no legal ground exist for compelling depositors not to withdraw. One should notice that completely informed depositors should also run. If they do not, they must carry the residual losses.

3.2.2 The monetarists' viewpoint

This view on financial crises is put forward by monetarists such as Friedman and Schwartz (1963/1971). In their view the deterioration of bank assets was not the primary cause of the banking crisis that hit the American banking system so badly in the 'thirties. They (Friedman and Schwartz, 1963/1971, page 355) make this statement:

> "Whatever may have been true of the initial bank failures in the first banking crisis, any ex ante deterioration in the quality of loans and investments in the later twenties or simply the acquisition of low-quality loans and investments in that period, even if no different in quality than in earlier periods, was a minor factor in the subsequent bank failures. As we have seen, the banking system as a whole was in a position to meet the demand of depositors for currency only by a multiple contraction of deposits, hence of assets. Under such circumstances any runs on banks for whatever reason became to some extent self-justifying, whatever the quality of assets held by banks. Banks had to dump their assets on the market, which inevitably forced a decline in the market value of those assets and hence the remaining assets they held. The impairment in the market value of assets held by banks, particulary in their bond portfolios, was the most important source of impairment of capital leading to bank suspensions, rather than the default of specific loans or specific bond issues."

According to Friedman and Schwartz the solution for the banking crisis would have been an adequate monetary policy. If the Fed had provided enough

liquidity, to be more specific: high powered base money, to the financial system a spreading of liquidity problems, eventually resulting in a solvency crisis, would have been prevented.[11] The financial crises of the 'thirties resulted, according to the monetarists, in a deep depression. The mistaken monetary policy induced a downward spiral of bank failures and monetary contraction.

3.2.3 Is deposit insurance an appropriate solution?

The traumatic events during the great depression resulted in some important changes in the regulation of the American financial system. In order to prevent bank runs a system of deposit insurance was installed in 1933. Although this deposit insurance scheme turned out to be effective for a period of more than forty years, it suffers from some serious shortcomings. The flat premium rate is an incentive for excessive risk taking by the insured institutions. In the stable years after World War II the shift of risks to the insurance companies was a rather rare event. At the end of the 'seventies and during the 'eighties the economic climate turned more unstable. Increasing inflation and more volatile interest and exchange rates exposed banks to greater risks than ever before. The economic downturn of the early 'eighties affected not only the indebted third world countries but also the oil and agricultural sector and thereby the banks lending to these countries and sectors. As a result, especially in the United States, bank failure rates rose to levels unprecedented since World War II.

The recent developments in the U.S.A. put a lot of pressure upon the insurance system. A crucial question is whether the "traditional" considerations to install an insurance scheme were correct or not. The monetarist view on the great depression has been criticised on several counts. White (1980) has investigated in detail the causes of the bank failures in the 'thirties. His conclusions are not quite in line with the mainstream views. The deterioation of asset quality lowered the solvency of the banks investigated. This process had already started several years before the actual failures. In his opinion the explanation that bank capital was wiped out because of fire sale asset sales cannot be sustained. Only a minor part of the bank failures can be explained from and unexpected withdrawals. It should be mentioned, however that some banks had unbalanced liability structures. They relied too much on interbank and federal funds and were more sensitive to sudden withdrawals. White also stresses the differences in banking structure between the U.S.A. and Canada. In the latter country branching and interstate banking was allowed. Therefore banks could build up larger and better diversified portfolios and could better resist the downturn in the agricultural sector. The U.S. banking system was to White's opinion more fragile and unstable as a consequence of regulation.

Another important different view is proposed by Bernanke (1983). He offers a rather different explanation of the banking crisis. The failure of

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[11] Friedman and Schwartz (1963/1971, page 353)the make the following remark:

"If detoriation of credit quality or bad banking was the trigger, which it to some extent may have been, the damaging bullet it discharged was the inability of the banking system to acquire additional high-powered money to meet the resulting demands of depositors for currency, without a multiple contraction of deposits."

many corporations induced a shift in the willingness of banks to accept risks and therefore bank managers became more reluctant to make new loan commitments. The deflationary process made real interest rates higher and these higher rates resulted in a less risk-averse attitude of current borrowers. The higher real rates also attracted more risky projects to be financed. Given the higher interest rates low risk/low return projects were not longer profitable. Projects with a large variance in expected results were not attractive for banks. Banks do not gain from the high profit of a successful project but have to accept a loss when a projects fails. To limit their risk exposure banks had to <u>ration</u> the quantity of credit committed to projects. According to Bernanke it is very well possible that the process of deflation made financial intermediation more risky and costly.

Opinions on the causes of the great depressions hava changed considerably. Kaufman (1986, page 77) makes, after having presented some extensive research results, the following statement:

> "U.S. history suggests that runs on individual banks or groups of banks only rarely spread to other banks that are not subject to the same conditions that started the runs, and that most bank runs have been contained by appropriate action, with only minimal and short-lived adverse effects on national financial stability and economic activity. Generally, the instability of individual banks of groups of banks has not translated into instability in the banking system as a whole. The major exception was the run on all banks in late 1932 trhough early 1933, which caused the banking system to grind to almost a complete halt and substantially reinforced the economic crisis at the time. Although an exception, this event was so traumatic that it has colored analysis of bank runs and failures ever since."

The new insights regarding the possibilities of a breakdown of the banking system and the preventions and remedies against it raise the question whether a deposit insurance system, offering full coverage, is a proper solution or not. Deposit insurance takes away the incentives for the insured creditors to monitor their banks on the one hand and gives incentives for bank managers to increase the market value of their bank by shifting risk to an insurance fund on the other hand. This conclusion brings us to our last question.

4. **Is regulation an origin of instability?**

Another explanation of financial crisis is given by authors who explain a crisis from excessive growth, while assuming to0 much risk, of financial institutions. Often the growth coincides with a regime of de- of reregulation of the financial system. Although several forms of regulation exist, the most usual form of regulation consists of the imposition of capital and liquidity ratios and risk constraints for individual financial firms. In many countries they are excluded from making direct investments, or (in the U.S.A or Japan) from underwriting activities. In most countries the financial and business sectors are separated to prevent an interference of risks (Pecchioli, 1987). In several countries the government has introduced some kind of deposit insurance and insurance premiums are charged. As a result regulation is felt to be repressive; financial firms are excluded from profitable opportunities. Financial regulation is mostly justified by the

"public interest" consideration.[12] Private depositors should be protected against losses and a disruption of the financial system should be prevented.

Financial regulation, however, does not only result in disadvantages for the regulatees. As a result of regulation the intensity of competition is dampened, the entry of new competitors is restricted and financial firms are given explicit or implicit advantages.[13] The relative protection of the financial sector results in a freezing of competition and the existence of above normal profits. Also, as a result of regulation, relatively ineffi- cient firms are allowed to survive because normal market forces do not drive out the bad performers, contrary to what would happen in unregulated sectors.

Profit maximizing firms try to find loopholes in the regulatory framework by developing new financial instruments (Kane, 1981, 1987). In the U.S. banks effectively circumvented the ceilings imposed by regulation Q by creating NOW-accounts, the anti-branching laws were undermined by establis- hing non-bank banks. The pressure on Congress to abolish the Glass-Steagall act is still growing and the act is already circumvented by commercial banks in several ways. Banks also try to engage in new activities, for example real estate financing and development, to boost their profits. On the other hand financial firms still try - as already explained - to exploit the benefits of regulation. Especially new invaders in the financial marketplace try to gain from the possibility to earn higher profits.

In the long run the pressure from the regulatees on the regulators to reorganize the regulatory framework grows. The regulators on their side also feel the need to take measures. Their influence upon the regulatees is slipping away because the regulatees are getting more and more involved in unregulated activities and unregulated firms are sneaking into the financial sector Lithan (1988).

Usually reregulation consists of two elements. On the one hand we can see the <u>liberalisation</u> of constrained activities. Interest ceilings are pased out, more facilities for underwriting activities are given and geographic and product restrictions are relieved. Banks (or other financial firms) are allowed to offer new products, like industrial and consumer loans and flexible rate mortgages. Especially in the early 'eighties the American financial system was deregulated within a very short period. The deregulati- on of this formerly heavily regulated system is not without some negative consequences. In the U.S.A. the sector of thrifts and savings and loans associations, which due to their inflexible balance sheet structure suffered from the explosive rise in the interest rate levels in the early 'eighties, needs massive financial injections by the federal government. By diversify- ing away in new activities these institutions took excessive risks which resulted in heavy losses.[14]

Allen (1987) explains this behaviour from an agent/principal point of

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[12] Stigler (1971), Posner (1971, 1974), Peltzman (1976), Holcombe and Holcombe (1986) contributed to the theories of regulation.

[13] A very clear example of an implicit advantage is the underpricing of deposit insurance in the United States. The flat premium structure is also an important incentive for institutions to shift the risk to the insurance company.

[14] The problems concerning the SLA's problem are discussed in detail by Lithan (1988) en Benston (1985). Benston rejects the regulators' opinion that deregulation caused a lot of trouble for the SLA's. He tries to prove that may SLA's failed due to an excessive interest rate risk.

view. The institutions management tries to make extra profits by engaging in risky projects like risky loans and real estate. When such a project turns out to be a success the profits made are fully added to the institutions equity. A loss, however, is after subtracting from equity shifted to the depositors or the insurer involved. One can imagine that such a nothing to lose strategy is adopted when an institution is already economic insolvent.

On the other hand, during a period of transition towards a new regulatory regime, some other rules are tightened. Regulators try to regain their influence. A well-known example is the imposition of risk-based capital requirements on banks in the U.S.A.. By relating the solvency ratios to the risk exposure of the institution the regulating authorities try to limit excessive risk taking. Indeed, in the long run a tightening of capital ratios will result in an improved quality of loan portfolios and higher earnings levels. But as a side effect a new problem arises. Some institutions are not able to meet the new ratios instantaneously. Some safe strategies to respond to the new requirements, for example attracting new capital or selling off loans, will lower current shareholdings value when the market pays a too low price for sold off loans. Such a risk averse attitude will, at first instance, also lower management's earnings and possibly result in a loss of employment. Therefore, it is very well possible that management opts for a more dangerous strategy and engages in high risk activities. In this context Wall and Peterson (1987, page 599) warn for the dangers of imposing new ratios:

"Given theoretical evidence that regulatory control over bank capital leads to greater risk taking, the regulatory agencies should intensify their supervision of those Bank Holding Companies increasing their equity capital due to regulatory pressures."

One could object that market discipline would prevent management from shifting toward a less prudent attitude. But the informational asymmetry between management and shareholders/depositor hampers the functioning of the market.

We therefore can conclude that the interactive process of deregulation and reregulation is not without major dangers. New opportunities may be an incentive to excessive risk-taking and the imposition of new requirements may, on the short run, lead to a go-for-broke strategy.

The current system of financial regulation suffers from an internal contradiction. Regulation is said to be imposed to protect the depositors (a micro consideration) but in fact priority is given to the stabilization of the banking system as a whole (a macro- consideration).

5. Some possible solutions

The American experience is a clear example of the disadvantages of overregulation. Many detailed and rigid rules, imposed long ago, turned out to be counterproductive. The commercial banks and thrifts became less able competetive and the bill of inefficient regulation has to be paid by the taxpayers. European history show us that a more liberal regulatory system (allowing universal banking in several countries) does not necessarily lead to more failures or higher risk taking by banks. On the contrary, these banking systems prove to be rather stable.

The rapid changes in the financial market place ask for a more flexible system of supervision. Risk related ratios create the possibility for a

rapid adaption by the regulators to new situations, thereby capturing new risks. The authorities should set themselves to measure risk on an aggregate level. This can be done by measuring the volatility of earnings and relating insurance premiums or capital rations to the riskiness measured.

The question remains however whether insurance is a proper solution to maintain the safeguarding of the financial system or should be replaced by another instrument. My objection against an insurance system is, that - as experience shows us - all, even the uninsured, creditors are protected by it. It also takes away the incentives to maintain market discipline. My most important objection against an insurance scheme is that insurance is only viable if it is backed by the government. A depleted fund <u>must</u> be refunded by the (federal) government otherwise, in case of a major shock, the public will lose confidence and run.[15] But, by insuring banks, the government gives away its discretionary competence. Offering discretionary Lender of Last Resort facilities would be a better solution. If the government gives no explicit guarantee to bail out banks, risk taking becomes less attractive.

I do not think recent solutions against bank runs, as proposed recently by Calomiris, are viable ones. He (Calomiris, 1989, page 25) suggest a two-tier deposit insurance system. On a local level insurance premiums charged to the institutions would depend on local failure rates. This way of rate-setting would be an incentive for low risk banks to monitor their more risky neighbors more closely. On the federal level the government should support the system. In an integrated financial market local - geographical determined - systems cannot survive. For the same reason I also doubt whether private remedies like suspension of convertibility or the support by clearinghouses, as described by Dwyer and Gilbert (1989), can mitigate the adverse effects of bank runs as the seem to have done in the past.

Several other proposals have been made to prevent bank runs. Although they differ on minor aspects, they have one issue in common. The two basic functions of bank, providing liquidity and intermediation, should be separated (Fama, 1980, 1985, Kareken 1985). As intermediaries banks should issue long term IOU's and use the revenues to buy non-marketable assets. As providers of liquidity they should hold a portfolio a large, long term, riskfree assets and transform these into small units with a fixed value. In the former case the IOU's are non-withdrawable risk sharing contracts, in the latter case the deposits are riskfree. Is this an adequate solution? Several authors argue that by this solution the raison d'être of banks is taken away (See for a survey: Goodhart, 1988, chapter 7). Banks originated because they were able to provide a package of services. The can offer liquidity services and risk sharing <u>together</u>.

Another quality of fractional reserve banks is that they are able to make investment funds available before the savings needed are actually generated. Their willingness to provide finance, combined with risk taking, is an important source of profits ans economic growth. Their ability and willingness to accept risks increases social welfare. Of course banks do not unconditionally accept risks; they generate information before they actually lend out funds and continue in collecting information until the loan is repaid. But risks are not completely predictable or controllable. <u>Uncertain-</u>

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[15] Guttentag and Herring (1986) developed a micro-economic framework to explain why bankers and their regulator systematically underestimate the possibility of a macro-economic shock that can destabilize the functioning of the banking system. Ho and Saunders (1980) explain the micro-economic mechanism behind a shock.

ty, in a Knightian sense, will always exists and there can always be a small possibility of a disruption of the financial system. The shocks will never be predicted adequately, even when all economic agents have rational expectations. To my mind the government has to provide the collective good of being a ultimate resort for the private sector. The separation of the functions of fractional reserve banks would be a remedy worse than the disease.

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